

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.-9. (Canceled).

10.-11. (Canceled).

12. (Previously Presented) The method according to claim 19, wherein the enzyme is at least one selected from the group consisting of oxidoreductase, transferase, hydrolase, lyase, isomerase, synthase and ligase.

13. (Canceled).

14. (Canceled).

15. (Canceled).

16. (Canceled).

17. (Canceled).

18. (Canceled).

19. (Currently Amended) A method of preparing triple-layered microcapsules

containing an enzyme stabilized therein ~~comprising~~consisting of the steps of:

1) dispersing an enzyme into a low molecular weight polyol selected from the group consisting of polyethylene glycol, polypropylene glycol, and copolymers or derivatives thereof; butylene glycol, propylene glycol or glycerine, whose molecular weight is 1,000 g/mol or less to form a polyol domain in the microcapsule and stabilize the enzyme;

2) re-dispersing the dispersed enzyme/polyol solution of step 1) into a polymer solution containing high molecular weight polyol selected from the group consisting of polyethylene glycol, polypropylene glycol, and copolymers or derivatives thereof, whose molecular weight is

more than 1,000 g/mol to provide hydrophobic distribution of the enzyme in the microcapsule which provides a buffer that prevents direct contact between the enzyme and the hydrophobic wall material in the microcapsule;

3) emulsifying the solution of step 2) to collect an emulsion; and
4) solidifying the enzyme/polyol/polymer emulsion of step 2) and separating the aqueous low molecular weight polyol which flows out from an inner phase through an external surface of the microcapsule while the high molecular polyol remains in the microcapsule and collecting hard polymer microcapsules;

wherein a wall-component polymer selected from the group consisting of poly-L-lactic acid, poly-D,L-glycolic acid, poly-L-lactic acid-co-glycolic acid, poly-D,L-lactic acid-co-glycolic acid, polycaprolactone, polyvalerolactone, polyhydroxybutyrate, polyhydroxyvalerate, polyorthoester, and copolymers produced from these monomers, polystyrene, poly p- or m-methylstyrene, poly p- or m-ethylstyrene, poly p- or m-chlorostyrene, poly p- or m-chloromethylstyrene, polystyrene sulfonic acid, poly p-, m- or t-butoxystyrene, polymethyl(meth)acrylate, polyethyl(meth)acrylate, polypropyl(meth)acrylate, poly n-butyl(meth)acrylate, polyisobutyl(meth)acrylate, poly t-butyl(meth)acrylate, poly 2-ethylhexyl(meth)acrylate, poly n-octyl(meth)acrylate, polylauryl (meth)acrylate, polystearyl(meth)acrylate, poly 2-hydroxyethyl(meth)acrylate, polyethylene glycol(meth)acrylate, metoxypolyethylene glycol(meth)acrylate, polyglycidyl(meth)acrylate, polydimethylaminoethyl(meth)acrylate, polydiethylaminoethyl(meth)acrylate, polyvinylpropionate, polyvinylbutyrate, polyvinylether, polyallylbutylether, polyallylglycidylether, poly(meth)acrylic acid, polymaleic acid, polyalkyl(meth)acrylamide and poly(meth)acrylonitrile is dissolved in the polymer solution of step 2),

thereby producing a three component microcapsule in which the enzyme is surrounded and protected by the high molecular weight polyol and the wall component polymer forms an outer wall around the enzyme and high molecular weight polyol.

20. (Currently Amended) A method of preparing triple-layered microcapsules containing an enzyme stabilized therein ~~comprising~~consisting of the steps of:

1) dispersing an enzyme into a low molecular weight polyol selected from the group consisting of polyethylene glycol, polypropylene glycol, and copolymers or derivatives thereof; butylene glycol, propylene glycol or glycerine, whose molecular weight is 1,000 g/mol or less to form spherical dispersoids in which only the external layer of the enzyme partially dissolves therein to form an enzyme/polyol mixture phase dispersed solution to disperse, protect and stabilize the enzyme;

2) re-dispersing the dispersed enzyme/polyol solution of step 1) into a polymer solution containing high molecular weight polyol selected from the group consisting of polyethylene glycol, polypropylene glycol, and copolymers or derivatives thereof, whose molecular weight is more than 1,000 g/mol to provide hydrophobic distribution of the enzyme in the microcapsule which provides a buffer that prevents direct contact between the enzyme and the hydrophobic wall material in the microcapsule;

3) emulsifying the solution of step 2) to collect an emulsion; and

4) solidifying the enzyme/polyol/polymer emulsion of step 2) and separating the aqueous low molecular weight polyol which flows out from an inner phase through an external surface of the microcapsule while the high molecular polyol remains in the microcapsule and collecting hard polymer microcapsules;

wherein a wall-component polymer selected from the group consisting of poly-L-lactic acid, poly-D,L-glycolic acid, poly-L-lactic acid-co-glycolic acid, poly-D,L-lactic acid-co-glycolic acid, polycaprolactone, polyvalerolactone, polyhydroxybutyrate, polyhydroxyvalerate, polyorthoester, and copolymers produced from these monomers, polystyrene, poly p- or m-methylstyrene, poly p- or m-ethylstyrene, poly p- or m-chlorostyrene, poly p- or m-chloromethylstyrene, polystyrene sulfonic acid, poly p-, m- or t-butoxystyrene, polymethyl(meth)acrylate, polyethyl(meth)acrylate, polypropyl(meth)acrylate, poly n-butyl(meth)acrylate, polyisobutyl(meth)acrylate, poly t-butyl(meth)acrylate, poly 2-ethylhexyl(meth)acrylate, poly n-octyl(meth)acrylate, polylauryl (meth)acrylate, polystearyl(meth)acrylate, poly 2-hydroxyethyl(meth)acrylate, polyethylene glycol(meth)acrylate, polyglycidyl(meth)acrylate, polydimethylaminoethyl(meth)acrylate, polydiethylaminoethyl(meth)acrylate, polyvinylpropionate, polyvinylbutyrate, polyvinylether, polyallylbutylether, polyallylglycidylether, poly(meth)acrylic acid, polymaleic acid, polyalkyl(meth)acrylamide and poly(meth)acrylonitrile is dissolved in the polymer solution of step 2),

thereby producing a three component microcapsule in which the enzyme is surrounded and protected by the high molecular weight polyol and the wall component polymer forms an outer wall around the enzyme and high molecular weight polyol.

21. (Previously Presented) The method according to claim 20, wherein the enzyme is at least one selected from the group consisting of oxidoreductase, transferase, hydrolase, lyase, isomerase, synthase and ligase.